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tine, impregnated with extravasation of blood, and often dead on the outermost layers. The contents of the bowels are, in such cases, more or less blood-colored, and, in consequence of the re-appearance of the bacteria of putrefaction, putrid and fetid. The cholera bacteria at this stage begin to disappear, but continue still to be present for some time in the solitary glands, and in their vicinity—a circumstance which first called attention to the presence of this peculiar bacterium in the bowels of the Egyptian cholera subjects. They entirely fail in such cases, only when the patient has lived through the cholera, and dies from the after-weakness. The cholera bacteria act exactly as other pathological bacteria. They occur only in their peculiar disease; their first appearance is when the illness begins; they increase in number with the severity of the attack, and gradually disappear as the illness wanes. They are found where the trouble exists; and their number at the height of the disease is so great, that their injurious effect on the lining of the intestines is explained. * * *

In the linen of cholera patients the bacteria increase in the most remarkable manner, when the clothes have been soiled with the evacuations, and then, for twenty-four hours, have been kept in a moist condition. This explains the known fact that the people having to do with such affected linen are often attacked. * * *

Another peculiarity of the cholera bacteria is, that they die, upon drying, much more quickly than most others. Commonly all life is extinct after three hours' drying. It has been noticed that their development only takes place well in substances having an alkaline reaction. A very small amount of free acid, which would have little or no effect on other bacteria, puts a marked check on their growth. In a healthy stomach they are destroyed, which is shown by the fact that neither in the stomach nor intestines of animals which have been constantly fed on cholera bacilli, and then killed, were any found. * * *

Perhaps, when the digestion is imperfect, the bacilli may be able to pass the stomach; and the fact observed in all cholera epidemics and in India, that those suffering from indigestion are especially subject to cholera, may bear out this view."—*From the translation of Koch's Report in Science.*

PSYCHOLOGY.

ROMANES' MENTAL EVOLUTION IN ANIMALS.¹—This volume is in continuation of the author's *Animal Intelligence*, and as the title indicates, it is largely speculative. The argument assumes the truth of the theory of evolution, and that phase of it known as Natural Selection; indeed, the author seems thoroughly committed to the latter theory, since, on p. 62, he insists that "the method of nervous evolution has everywhere been uniform," a

¹ *Mental Evolution in Animals.* By GEORGE JOHN ROMANES, with a posthumous *Essay on Instinct.* By CHARLES DARWIN. New York, D. Appleton & Co., 1884. 12mo, pp. 411. \$2.

statement which is not only too dogmatic, but, if we understand the author's meaning, is opposed to many facts; as we find remarkable cases of reasoning power in orders and classes, which are generally considered structurally low; for example, the white ants among Pseudoneuroptera, and the beaver among rodents. One chief objection to the author's theory of uniform nervous evolution, is the occurrence of what are usually regarded as unexpected, unlooked-for evidences of comparatively high intelligence in groups where they are, so to speak, normally absent. And it is these sudden or, so to speak, capricious instances, like the occurrence of sports or new varieties of plants and animals, which may or may not be perfected and transmitted, and which the convenient expression "saltatory evolution" covers, which suggest the occasional sudden origin of mental traits. If this principle of sudden, saltatory evolution be granted, the task of accounting for the rise and transmission of mental traits will be, if not much more simplified, at least more readily appreciated and accepted. It will be more in accordance with nature, for uniformitarianism in geology has its catastrophic crises; the vegetable and animal series have their broken branches, sudden degradations and lapses, and why should nervous evolution alone be "uniform in its upward development?" Mr. Romanes, like most of his countrymen, is a devout and blind follower of the late Mr. Darwin, and, like most disciples, carries out his special theory of natural selection with more of dogmatism and unwavering trust than his master.

Barring then the particular working theory upon which this essay is grounded, we find little to criticise and much to endorse in the work before us. Mr. Romanes has been careful in the selection, and, where possible, verification of his facts, and in most cases his inferences command our assent. It was not his intention evidently to treat the matter historically, for the literature of the subject of animal intelligence is voluminous; but the method of handling the particular theory upon which the work is based, is, next to Darwin, original with our author, and the book will doubtless remain a classical contribution to speculative biology. As others before him, Mr. Romanes decides that an organism has a mind when it makes an intentional choice, and that such a choice is a conscious one, as opposed to reflex actions. After devoting a chapter to the structure and functions of nerve-tissue, our author next turns to the physical basis of mind, and considers in a necessarily inconclusive way, from the standpoint of natural selection, *i. e.*, uniformitarianism exclusively, the relation between the mass of the brain and degree of intelligence.

The root principles of mind are seen in "the power of discriminating between different kinds of stimuli, irrespective of their relative degrees of mechanical intensity, coupled with the power of performing adaptive movements suited to the results of such dis-

crimination." These two powers or faculties are seen in the actions of the *Amœba*; when their elaboration has proceeded to a certain extent, they begin gradually to become associated with feeling, "when they are fully so associated, the terms choice and purpose become to them respectively appropriate." Then follow chapters on consciousness, sensation, pleasures and pains, memory and association of ideas, perception and imagination. Six chapters are devoted to the consideration of instinct; chapter XIX is upon reason, and the last one, the twentieth, relates to animal emotions, and ends with a summary of intellectual faculties.

Dr. Romanes' views as to the comparative standing of animals in the intellectual scale are interesting, and we shall reproduce them hereafter. The essay by Mr. Darwin was one omitted from his *Origin of Species*, but will still be read with interest.

DO LABRADOR DOGS BARK?—In his *Mental Evolution in Animals*, Romanes remarks as follows (Appleton's edition, p. 250), regarding the barking of dogs in Labrador: "Lastly, it is now well known that the dogs of Labrador are silent as to barking." I find the following notes in my journal of a summer spent at Caribou island, Straits of Belle Isle, on the Labrador coast in 1860. "Some of the Esquimaux dogs are full-blooded, others are quarter, others half-Newfoundland. They keep up a constant howling. They are savage beasts. One without any provocation leaped up and bit a man twice in his hand, and very badly lacerated the under side of his arm." I cannot now remember that these dogs actually barked, but they were often heard to howl and were noisy creatures. In 1864, at Chateau bay, I heard the Newfoundland dogs on the vessels in the harbor barking. At Hopedale, the Eskimo dogs of the Eskimo of this settlement were thus characterized by Rev. Mr. Wasson in an article entitled "Ice and Esquimaux" in the *Atlantic Monthly* for April, 1865, p. 442, "Prick-eared Esquimaux dogs huddle, sneak, bark, and snarl around, with a free fight now and then, in which they all fall upon the one that is getting the worst of it."—*A. S. Packard.*

HOW A BEAR CATCHES FISH.—I came suddenly upon a very large bear in a thick swamp, lying upon a large hollow log across a brook, fishing; and he was so much interested in his sport that he did not notice me until I had approached very near him, so that I could see exactly how he baited his hook and played his fish. He fished in this wise: There was a large hole through the log on which he lay, and he thrust his forearm through the hole and held his open paw in the water and waited for the fish to gather around and into it, and when filled he clutched his fist and brought up a handful of fish, and sat and ate them with great gusto; then down with the paw again, and so on. The brook was fairly alive with little trout and red-sided suckers, and some black suckers. He did not eat their heads. There was quite a pile of

them on the log. I suppose the oil in his paw attracted the fish and baited them even better than a fly hook, and his toe nails were his hooks, and sharp ones, too, and once grabbed the fish were sure to stay. They also catch frogs in these forest brooks, and drink of the pure water in hot summer days, and love to lie and wallow in the muddy swamps as well as our pigs in the mire. They often cross narrow places in lakes by swimming, and also rivers, and seem to love to take a turn in the water. I once saw one swimming from the mainland to the big island in Moosemaguntic lake, with just a streak of his back out of the water, looking like a dog moving along. Sometimes you see only their heads out of water; at other times half their bodies are to be seen. We account for this difference by condition. If fat, the grease helps buoy them up; if lean they sink lower in the water.—*Lewiston Journal*.

CUNNING AS A FOX.—The term “cunning as a fox” is by no means an ill-jointed figure of speech. Those who know best the habits of the fox are the most ready to accord to him the well-earned epithet “wily reynard.” Not only is he careful of his own reputation and life, but he has a sort of a masonic solicitude for all of his craft. Two incidents, as related by eye-witnesses, will serve well to illustrate this.

Near the boyhood home of one of the writer's old college professors there was a high hill. Its rocky sides were covered with small trees and bushes. Here and there were fissures and small caves, occupied in earlier days by bears and other animals. The larger animals had all retired before the tide of civilization to more desolate solitudes. One old fox seemed to hold undisputed sway of the wily throne. On a smooth surface of the rock near the summit she would remain for hours planning her campaigns and nightly raids on neighboring farmyards, while her young gamboled about her. From her outlook on the hill she could plainly discern the fowl in the yard of our friend, who lived under the shadow of her home, but her cunning (or reason shall I call it?) would not allow the thought of molesting them. She seemed to well understand that she and her young could be seen by the family, hence she reasoned that if fowl disappeared from the yard the theft would be charged upon her, and her life would be sought.

Whatever her mental processes, she was never known to molest the farmyards nearest her retreat, but would often go miles from her home and there make havoc at the expense of some poor farmer. Her cunning enabled her to surely retain her home and prolong her days.

Another incident will show the solicitude that foxes have one for another. In Northwestern Maine there lives an old man who has become an expert trapper. One of his chief delights is to distance any other man in the number of foxes captured. While

on a vacation last season I chanced one day to fall in with this famous trapper, and had from his lips the following: "I became satisfied years ago that foxes often helped their fellows out of trouble. Not long ago I went out as usual in late autumn and set some traps for foxes. Sickness called me away from home, so that I did not get an opportunity to visit my traps for more than a week. In the meantime there had been a light fall of snow. When I had a leisure half day I shouldered my gun and went out to see what the sport was. My traps were all unmolested except one, that was nowhere to be found. I began to circulate around the place where it had been, taking a wider and wider sweep every time. At length, about a quarter of a mile distant from where it had been placed, in a dense piece of woods, I found my missing trap and a fox in it, fast by the leg. The old fellow was remarkably fresh and active, although he had been in the trap apparently for some days. The snow about him was well trodden down, and lying all around him, within in his reach, were an abundance of dead mice. If his fox friends could not release the captive, they were determined that he should not starve."—*B. S. Rideout, in Forest and Stream, June 26th, 1884.*

ANTHROPOLOGY.¹

ANTHROPOLOGY IN FRANCE.—Dr. E. T. Hamy, curator of ethnology in the National Museum at Paris, has sent us several brochures, of which he is the author, and whose contents will be briefly noticed:

La croix de Teotihuacan, Mém. lu a l'Acad. des Inscriptions et Belles Lettres, Nov., 1882." Paris, E. Leroux, 23 p. This pamphlet describes two cruciform figures exhumed by M. Charnay in 1880, at Teotihuacan, north of the San Juan river and west of the avenue leading to the palace of the moon. After giving a comprehensive sketch of Spanish authorities upon the sculptured crosses of Mexico, Dr. Hamy defends the opinion that the Mexican crosses in question are the symbols of Tlaloc, god of rain and storm, and of the mountain. Other types of crosses are derived from the tree, the serpent, or from fancy. The transfer of the cross symbol from Tlaloc to Quetzalcoatl is explained in the closing chapter.

Note sur les Figures et les Inscriptions gravées dans la roche a el Hadj-Memoun, near Figuig. Paris, E. Leroux, p. 11.

Note sur une Inscription Chronographique de la fin de la période Aztèque appartenant au Musée du Trocadéro. Paris, E. Leroux, 1883, p. 14. This brochure is devoted to the description of a tablet of polished obsidian, 5 x 16 x 21 cm., collected by M. Pinart, and bearing a chronographic inscription, which Dr. Hamy concludes to be December 9, 1483, the date of the commencement of the great teocalli of Mexico.

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